

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kakiuchi et al. (JP 2000-288135).

With regards to claims 1, 2 and 7, Kakiuchi et al. discloses an exterior surface treated article comprising a bulk-solidifying amorphous alloy (referred to as “massive bulk material” in paragraph [003] of the English machine translation or “massive amorphous alloy” in paragraph [0005] of the English machine translation) having a mechanically treated exterior surface and having improved durability and fatigue resistance over a similar article without the mechanically treated exterior surface, the mechanically treated exterior surface comprising a plurality of deformations in the exterior surface (referred to as “surface deteriorated layer in paragraphs [0007] and [0009] of the English machine translation). See also the abstract.

Regarding claims 3, 4 and 6, Applicant should note that using a shot-peening process with a shot having a diameter of approximately 0.006 inches to 0.040 inches, or a laser shock peening process are product-by-process limitations and as such have not been given any patentable weight. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product

itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP §2113.

Regarding claim 5, see abstract.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi.

With regards to claim 8, Kakiuchi et al. discloses a method of applying a grit blasting process to at least a portion of an exterior surface of an article, the article being made of bulk-solidifying amorphous alloy, creating a plurality of deformations in the exterior surface by mechanically compressing a plurality of abrasive grains against the exterior surface to create a mechanically treated exterior surface, wherein the article has an improved durability and fatigue resistance over a similar article without the mechanically treated exterior surface, see abstract and paragraphs [0003], [0007] and [0009] of the English machine translation. Although Kakiuchi et al. does not specifically

disclose a shot peening process, however it would have been obvious to one of ordinary skill in the art at the time the invention was made that the grit blasting process of Kakiuchi et al. is structurally equivalent to the claimed shot peening process. Applicant should note that amorphous alloys comprise bulk-solidifying amorphous alloys.

Regarding claim 9, Applicant should note that the grit blasting process of Kakiuchi et al. is applied to a substantial portion of the exterior surface.

Regarding claim 10, Applicant should note that it is obvious that improved durability and fatigue resistance would result in improved peak load for failure and increased cycles to failure under fatigue cycling.

5. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi et al. in view of Poynor (US 2002/0193177).

Kakiuchi et al. discloses an article of bulk-solidifying amorphous alloy as shown above. Although Kakiuchi et al. does not disclose a particular ratio of the peak load for failure of the article versus the similar article, however it is known to use a sufficient amount of shot peening or grit blasting to produce a sufficient residual compressive stress, whereby a high enough fatigue limit is reached to satisfy a desired peak load for failure, and determining the desired peak load limit is within the general skill level of a worker in the art, see paragraph [0027]. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have shot peened or grit blasted the article of bulk-solidifying amorphous alloy of Kakiuchi et al. to achieve a desired ratio of peak load for failure of the article versus a similar article, in light of the teachings of Poynor, in order to produce an article with improved durability.

6. Claims 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi et al. in view of Kim et al. (US Patent 6,325,868).

Kakiuchi et al. discloses an article of bulk-solidifying amorphous alloy as shown above except for the recited composition. However such bulk-solidifying amorphous alloys are old and well known in the art as attested by Kim et al., see column 2, lines 26-62 and column 4, lines 7-16. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an article of bulk-solidifying amorphous alloy having the recited composition as the article of Sano et al., in light of the teachings of Kim et al., since it has been held to be within the general skill level of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. See also *Ballas Liquidating Co. v. Allied industries of Kansas, Inc.* (DC Kans) 205 USPQ 331.

7. Claims 1-10 are, *in the alternative*, rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi et al. in view of Scruggs et al. (WO 97/20601).

With regards to claims 1, 2 and 7, Kakiuchi et al. discloses an exterior surface treated article comprising an amorphous alloy having a mechanically treated exterior surface and having improved durability and fatigue resistance over a similar article without the mechanically treated exterior surface, the mechanically treated exterior surface comprising a plurality of deformations in the exterior surface (see abstract and paragraphs [0003], [007] and [0009] of the English machine translation). In case Applicant disputes the examiner's assertion that "massive bulk material" and "massive

amorphous alloy” refer to bulk amorphous alloy in the English machine translation of Kakiuchi et al., it is known to form golf club heads as disclosed by Kakiuchi et al. from bulk-solidifying amorphous alloys as attested by Scruggs et al., see abstract and page 6, lines 11-18. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the article of Kakiuchi et al. from bulk-solidifying amorphous alloy, in light of the teachings of Scruggs et al., in order to provide an article with high material stiffness, high stiffness-to-weight ratio and high strength-to-weight ratio, see page 3, lines 1 and 2 of Scruggs et al.

Regarding claims 3, 4 and 6, Applicant should note that using a shot-peening process with a shot having a diameter of approximately 0.006 inches to 0.040 inches, or a laser shock peening process are product-by-process limitations and as such have not been given any patentable weight. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP §2113.

Regarding claim 5, see abstract of Kakiuchi et al.

With regards to claim 8, Kakiuchi et al. discloses a method of applying a grit blasting process to at least a portion of an exterior surface of an article, the article being made of an amorphous alloy, creating a plurality of deformations in the exterior surface

by mechanically compressing a plurality of abrasive grains against the exterior surface to create a mechanically treated exterior surface, wherein the article has an improved durability and fatigue resistance over a similar article without the mechanically treated exterior surface, see abstract. In case Applicant disputes the examiner's assertion that "massive bulk material" and "massive amorphous alloy" refer to bulk amorphous alloy in the English machine translation of Kakiuchi et al., it is known to form golf club heads as disclosed by Kakiuchi et al. from bulk-solidifying amorphous alloys as attested by Scruggs et al., see abstract and page 6, lines 11-18. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the article of Kakiuchi et al. from bulk-solidifying amorphous alloy, in light of the teachings of Scruggs et al., in order to provide an article with high material stiffness, high stiffness-to-weight ratio and high strength-to-weight ratio, see page 3, lines 1 and 2 of Scruggs et al. Further although Kakiuchi et al. does not specifically disclose a shot peening process, however it would have been obvious to one of ordinary skill in the art at the time the invention was made that the grit blasting process of Kakiuchi et al. is structurally equivalent to the claimed shot peening process.

Regarding claim 9, Applicant should note that the grit blasting process of Kakiuchi et al. is applied to a substantial portion of the exterior surface.

Regarding claim 10, Applicant should note that it is inherent that improved durability and fatigue resistance would result in improved peak load for failure and increased cycles to failure under fatigue cycling.

8. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi et al./Scruggs et al. as applied to claim 10 above, and further in view of Poynor.

Kakiuchi et al./Scruggs et al. discloses an article of bulk-solidifying amorphous alloy as shown above. Although Kakiuchi et al./Scruggs et al. does not disclose a particular ratio of the peak load for failure of the article versus the similar article, however it is known to use a sufficient amount of shot peening or grit blasting to produce a sufficient residual compressive stress, whereby a high enough fatigue limit is reached to satisfy a desired peak load for failure, and determining the desired peak load limit is within the general skill level of a worker in the art, see paragraph [0027]. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have shot peened or grit blasted the article of bulk-solidifying amorphous alloy of Kakiuchi et al./Scruggs et al. to achieve a desired ratio of peak load for failure of the article versus a similar article, in light of the teachings of Poynor, in order to produce an article with improved durability.

9. Claims 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi et al./Scruggs et al. as applied to claim 1 above, and further in view of Kim et al.

Kakiuchi et al./Scruggs et al. discloses an article of bulk-solidifying amorphous alloy as shown above except for the recited composition. However such bulk-solidifying amorphous alloys are old and well known in the art as attested by Kim et al., see column 2, lines 26-62 and column 4, lines 7-16. Therefore it would have been obvious

to one of ordinary skill in the art at the time the invention was made, to have used an article of bulk-solidifying amorphous alloy having the recited composition as the article of Kakiuchi et al./Scruggs et al., in light of the teachings of Kim et al., since it has been held to be within the general skill level of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. See also *Ballas Liquidating Co. v. Allied industries of Kansas, Inc.* (DC Kans) 205 USPQ 331.

Response to Arguments

10. Applicant's arguments filed August 2, 2011 have been fully considered but they are not persuasive.

In response to Applicant's argument that Kakiuchi does not disclose an alloy having improved durability and fatigue resistance over a similar article without the mechanically treated surface and having a plurality of deformations in the exterior surface, the examiner respectfully disagrees. As outlined in the above rejections, paragraphs [0003] –[0009] of the English machine translation for example detail forming a golf club head with improved toughness over a similar golf club head without the mechanically treated surface, the mechanically treated surface having a plurality of deformations (referred to as “deteriorations” in the English machine translation). It is obvious that the improved toughness would result in improved durability and fatigue resistance. Further since the process of Kakiuchi is the same as the one claimed by

Applicant, it is reasonable to conclude that the process of Kakiuchi would achieve similar results as the claimed process.

In response to Applicant's argument that Kakiuchi does not disclose a bulk amorphous alloy, the examiner respectfully disagrees. As shown in the above rejections, the examiner submits that "massive bulk material" and "massive amorphous alloy" refer to bulk amorphous alloy in the English machine translation of Kakiuchi et al.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ESSAMA OMGBA whose telephone number is (571)272-4532. The examiner can normally be reached on M-F 9-6:30, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Essama Omgba/
Primary Examiner, Art Unit 3726

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